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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,274	07/02/2003	William A. Lane	T0461.70038 US00	4071
7590	09/22/2004		EXAMINER ANDUJAR, LEONARDO	
Steven J. Henry Wolf, Greenfield & Sacks, P.C. 600 Atlantic Avenue Boston, MA 02210			ART UNIT 2826	PAPER NUMBER

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/612,274	LANE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Leonardo Andújar	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 16 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11, 12, 14, 15, 17 and 18 is/are rejected.
- 7) ☒ Claim(s) 10 and 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/03</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of species 1, fig. 3 (claims 1-15, 17 and 18) in the reply filed on 06/25/2004 is acknowledged. Currently, claims 1 and 17 are generics (1-14 and 17). The traversal is on the ground that the examiner has not established a patentable difference. This is not found persuasive. In the restriction requirement sent on 05/07/2004, the examiner set forth that species 1 and 2 include mutually exclusive characteristics, which make them patentably distinct from each other. That is, the unpatentability of one of the species would not necessarily imply unpatentability of the other species. Although species 1 and 2 are related (i.e. genus) they include mutually exclusive characteristics, which make them patentably distinct from each other (i.e. two type of lead frames). As noted in MPEP § 808.01(a), an election of species should be required prior to a search on the merits in all applications containing species and generic claims, and in all applications in which a generic claim recites such a multiplicity of species that an unduly extensive and burdensome search is required. On the other hand, such an election of species should not be required if the species are considered clearly unpatentable (obvious) over each other or if there is an express admission by the applicants to that effect. In re Lee, 199 USPQ 108 (Comm'r Pat. 1978). The applicants have failed to submit or identify any evidence showing the species to be obvious variants or clearly admit on the record that this is the case. In addition to the above, each of the different species would require separately searching for each of their mutually exclusive characteristics. In other words, each of the species will require

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searching a separate subject of inventive effort. For all of the above reasons, the requirement is still deemed proper and is therefore made FINAL.

***Claim Rejections - 35 USC § 102***

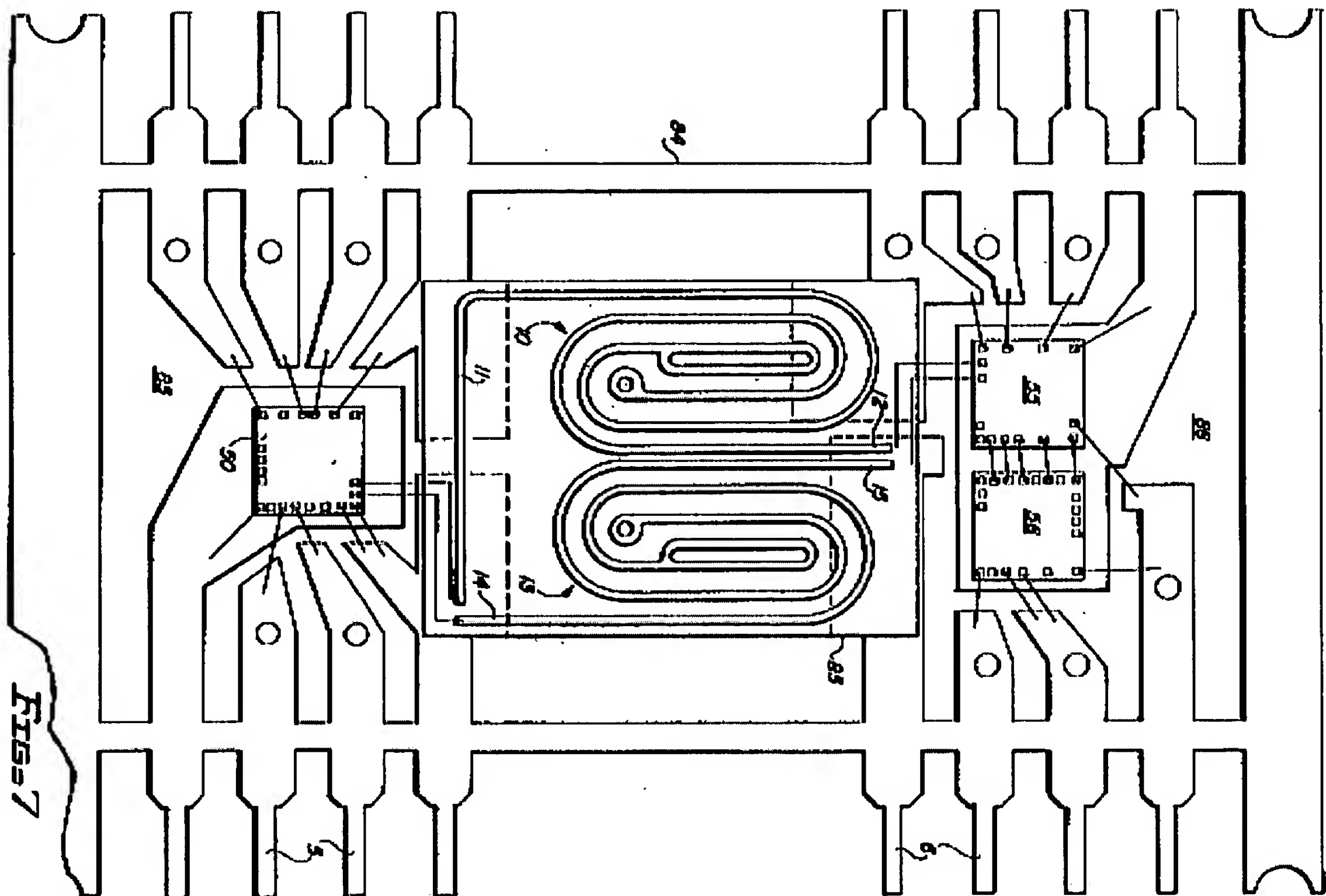
2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-5, 14, 15, 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Meinel (US 4,780,795).

4. Regarding claim 1, Meinel (e.g. fig. 7) shows a package device having a patterned lead frame 84 with at least two isolated patterned dies 50/55 mounted thereon, the package device additionally having a transformer component. The component is individually mounted to the lead frame between the at least two patterned dies, the transformer adapted to provide to the selective coupling of energy between the dies (see claims 17 & 19).



5. Regarding claims 2-4, Meinel shows each structural limitation of the claimed device including a transformer coupled between two dies. In reference to the claim language referring to the function of the transformer or its specific use such as adapted to provide for the selectively coupling of energy between the two dies wherein the selectively coupling effect a rejection of some of the unwanted energy components so as to provide for blocking of predefined component signals from coupling between the isolated pattern dies, intended use and other types of functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. In that regards none of the functional language recited in claims 2-4 appears to translate into a structural

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limitation distinguishing the claimed invention from Meinel. If the prior art structure is capable of performing the intended use, then it meets the claim. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963). See MPEP 2115 [R-1 & R-2]. For example, Meinel teaches that the transformed may be adapted to provide for the selectively coupling of energy between the two dies wherein the selectively coupling effect a rejection of some of the unwanted energy components so as to provide for blocking of predefined component signals from coupling between the isolated pattern dies (col. 3/lis. 12-47).

6. Regarding claim 5, Meinel teaches that the transformer component is formed as a planar transformer 67 in a substrate 46. The transformer 67 is considered a planar transformer based on the facts that its top and bottom surfaces are planar and it has being mounted in a planar configuration. Moreover, the substrate is mounted on the lead frame (claim 19).

7. Regarding claim 14, Meinel (*e.g.* fig. 7) shows a multi chip package device comprising a first chip 55, a second chip 50 and an isolating transformer component provided between the first and second chip (not shown in this figure). The first chip, the second chip and the transformer component are formed on segmented portions of a lead frame 84 of the package device. In this case, the inner segments of the leads are recognized as the segmented portions of the lead frame (see claims 17 & 19). Note that the chips, the substrate that contains the transformer are formed on the inner segments of the leads.

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8. Regarding claim 15, Meinel (e.g. fig. 5) shows that the coupling of signal across the first and second chips via the transformer component is configured in north-south configurations. Note Meinel shows that the transformer component is connected to the first chip 55 at the top section or north section 64 and to the second chip 50 at the bottom section or south section 63.

9. Regarding claim 17, Meinel shows a method of isolation components provided on a package multi chip device comprising the steps of: a) providing a patterned lead frame 84; b) mounting on the lead frame a plurality of patterned dies 55, 50; c) coupling energy between at least two of the patterned dies via an isolation transformer, the isolating transformer being provided on a separate component within the package to the dies being coupled (see claims 17 & 19). Note that the chips, and the substrate 85 that contains the transformer are provided in separate lead or components (see fig. 7).

10. Regarding claim 18, Meinel shows each structural limitation of the claimed device including a transformer coupled between two dies wherein the lead frame defines an axis. In reference to the claim language referring to the function of the transformer or its specific use such as a selectively coupling of energy will, when it occurs, occur in direction parallel to the axis, any functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. In that regards none of the functional language recited in the claim appears to imply a structural limitation not disclosed by Meinel. If the prior art structure is capable of performing the intended use,



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then it meets the claim. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963). See MPEP 2115 [R-1 & R-2].

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meinel (US 4,780,795) in view of Maghribi (US 2004/0094835 A1).

13. Regarding claim 6, Meinel does not disclose that the transformer is formed using a wafer level fabrication technology such as is used for forming redistribution layer in bumped chips. Maghribi teaches that transformers can be made by a photolithography process (pp 0015 & 19). Photolithography is a wafer level fabrication technology that can be used for forming redistribution layer in bump chip (see US 6,287,893, col. 7/lls. 8-35, which discloses that redistribution layer in bumped chips can be fabricated by photolithography). Furthermore, Maghribi's cost effective process produce transformers having stretchable metal traces that are capable of withstanding strains of 7% with S.D. (0015 & 0019). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Maghribi's cost effective process (i.e. which is a wafer level fabrication technology that can be used for forming redistribution layer in bumped chips) to make the transformer disclosed by Meinel in order to obtain a transformer



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having stretchable metal traces that are capable of withstanding strains of 7% with S.D. as taught by Maghribi.

14. Regarding claim 7, Maghribi teaches that the transformer can be fabricated on either a glass or silicon substrate (0016) whereas Meinel teaches that the substrate that includes the transformer is mounted on a lead frame (see claims 17 & 19).

15. Claims 8 and 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Meinel (US 4,780,795) in view of Boyd (US 6,362,559).

16. Regarding claim 8, Meinel shows most aspects of the instant invention including a transformer. Meinel does not disclose that the transformer is a discrete micro miniaturized transformer. However, Boyd discloses a micro miniaturized transformer. According to Boyd, micro miniaturized transformers are preferred because they are small, nonflammable and do not produce electromagnetically induced noise (col. 1/lls. 31-35 & col. 4/lls. 50-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a discrete micro miniaturized transformer in Meinel's invention since this type of transformer is small, nonflammable and/or do not produce electromagnetically induced noise as taught by Boyd.

17. Regarding claim 9, Boyd discloses that the micro miniaturized transformer is fabricated using a MEM technology (col. 4/lls. 50-53).

18. Claims 11 and 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Meinel (US 4,780,795) in view of Ghamaty et al. (US 20030111660 A1)

19. Regarding claim 11 and 12, Meinel shows most aspects of the instant invention except for a transformer's substrate comprising a flexible material such as polyimide.

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Nevertheless, Ghamaty teaches that polyimide (e.g. Kapton ®) is a suitable material for transformer fabrication since it provides an excellent balance of electrical, thermal, mechanical, physical, and chemical properties (pp 0035-38). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make transformer's substrate disclosed by Meinel comprising flexible material such as polyimide (e.g. Kapton ®) since this type of material provides an excellent balance of electrical, thermal, mechanical, physical, and chemical properties as taught by Ghamaty.

#### ***Allowable Subject Matter***

20. Claims 10 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonardo Andújar whose telephone number is 571-272-1912. The examiner can normally be reached on Mon through Thu from 9:00 AM to 7:30 PM EST.

22. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J. Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

23. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).



**Leonardo Andujar**  
Patent Examiner  
Art Unit 2826  
08/25/04